INJURIES TO THE BACK*

ECONOMIC ASPECT IN INDUSTRIAL CASES

REPORT OF CASES

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ANY discomfort of the back, developing while at work, becomes an industrial accident case. Complaint of pain or disability is rarely made until the person has slipped, fallen, received a blow, or made some movement which has "wrenched" the back.

Frequently the slightest trauma results in prolonged, and sometimes even permanent, disability, owing to the condition of the back at the time of the injury.

UNCOMPLICATED INJURIES TO THE BACK

In the absence of disease or abnormalities, a sudden strain of the back should disable the person for only a few days. Many injuries of that type repair very quickly and without treatment or loss of time from work. Repeated strains, however, cause an inflammation which finally becomes disabling, slow in its response to treatment, and which recurs easily.

Sprains of the back where muscles or ligaments are torn, or a small piece of bone is pulled off, are far more disabling; but these should respond completely to treatment within a few weeks.

Severe trauma to the back more often results in fracture of the body, transverse process, articular facet or lamina of a vertebra, and less frequently to dislocation of a vertebra, its articular facet, or the sacro-iliac joint. The injuries without paralysis should respond completely to treatment in from six to nine months. Those with temporary or partial paralysis should improve up to complete recovery, although this usually takes longer than when paralysis is absent.

BACK INJURY—COMPLICATED BY DISEASE

If disease or abnormality is present at the time of the injury, however slight, a very different result is usually obtained from those just given, because a diseased or abnormal spine is much more prone to strain and very resistant to treatment. Osteoarthritic spondylitis, radiculitis, active or latent Pott's disease, osteochondritis or pyogenic osteomyelitis of the spine, syphilitic spondylitis, or rhizomyelic spondylose, frequently are present before the trauma occurred which the employee believes was the cause of his disability.

Congenital abnormalities of the lumbar and lumbosacral regions are numerous, and are always a potential source of weakness. Six lumbar vertebrae of the long slender type with wide intervertebral spaces give hypermotility and instability during heavy work. The condition frequently encountered in industrial cases, when slight trauma has given marked disability, which yields stubbornly to treatment, is the fifth lumbar vertebra with its transverse processes very close to the ilia or sacralized, or one or both resembling the first sacral vertebra, or a lack of fusion of the laminae. Deformed or horizontal lumbosacral articulations cause far greater strain to the ligaments during lifting than do the normal joints.

Functional or structural scoliosis makes the back much more prone to strain. Another potentially weak back, which is too frequently overlooked as a cause of the disability, is that caused by poor posture. With the head held forward, the shoulders rounded, the dorsal curve exaggerated, lordosis, the sacrum horizontally inclined, and "lean back" position, the spinal column cannot stand the strain of heavy work.

Many cases of injury to the back are aggravated by prostatitis, pelvic conditions in women, calcareous degeneration of the dorsal and lumbar aortae, or some focus of infection, chief of which are the teeth, tonsils, and intestinal tract. Everted weak feet with flattened arches, tight heel cords and hamstring tendons, or one lower extremity shorter than the other, have often increased the disability in injuries to the low back. Strain of the iliolumbar ligaments, bursitis, traumatic or toxic myositis of the pyriformis or gluteal muscles, are frequently causes of the disability and are rarely considered by the surgeon in industrial cases.

As soon as the patient's condition permits, a careful history and thorough physical examination, with skillfully taken x-rays, should be made of every industrial case which has had an injury to the back. The severity, response to treatment, length of disability, accompanying physical condition, and mental attitude to previous accidents must be thoughtfully considered, as one should expect to encounter similar difficulties with treatment, as on previous occasions. The patient too often assumes the attitude that a back injury will never get entirely well. Even though a complete range of body motion, with no apparent muscle spasm or discomfort, has been regained, he will not admit that he is able to work.

The patient who has never been informed that he has sustained a fracture of the back frequently makes a recovery which is not possible when such knowledge has been conveyed to him. Every effort must be made to keep him hopeful that he will completely recover from his back injury.

REPORT OF CASES SHOWING AVOIDABLE LOSSES TO INSURANCE COMPANIES

The following cases illustrate losses to the insurance companies which should have been avoided:

CASE 1.—Male, age 30, laborer, with good physical development, good posture, and normal x-ray findings of the low back, gave a history of straining his back five years ago and of being treated for three months. About two and one-half years later he had had a similar strain and was treated for two months. I saw him a few months after he was discharged, in a bent-over position, being assisted across the street toward a physicians' building. Again, in about two years, after working on a new job for less than one-half a day, he stopped work because his back hurt. Passive treatment was given for three and one-half months with apparently no results. Then the case was transferred and active treatment was commenced at once. He soon obtained a complete, painless range of body

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movement and was discharged as cured. A careful history which suggested a condition demanding active treatment under rigid discipline should have been taken before beginning the long and expensive passive treatment.

CASE 2.—While raising bundles of wood above his head and throwing them onto a truck, a man, thirty-five years old, "felt something give way" in his low back. He continued work, but pain in the upper lumbar region soon became so severe that he had to stop. The following day the "company doctor" strapped his back. After two weeks the man tried to work, but could not continue because of sharp pain which accompanied each bending movement.

He received various kinds of treatment for nearly three years without any relief. Then the first x-rays of the spine were taken. They showed a fracture of the transverse process of the first lumbar vertebra with nonunion and but small space between the fragments. At operation a bursal sac was found between the fragments and was removed with the outer fragment. In four weeks he returned to work with complete painless range of body movements. X-rays taken immediately after the injury and rigid conservative treatment would have prevented a large loss of money to the insurance company.

CASE 3.—Male, age 39, while working on the top of a pole fell, straining his low back and injuring his right shoulder. Both stubbornly resisted all forms of treatment for several months. X-rays of the low back failed to show any pathology, but those of the dorsal region gave evidence of an apparently healed dorsal Pott's. Many months later the x-ray showed an active process and a large abscess near the old lesion. A Hibbs' fusion operation gave excellent results.

X-rays of the shoulder, which at first did not show any pathology, finally revealed destruction in the head of the humerus and glenoid region with obliteration of the joint space. An abscess developed in the axilla. Pus from this abscess gave a positive guinea-pig test for tuberculosis.

At the time the patient was allowed to work on poles he had an apparently healed dorsal Pott's disease with a well-defined kyphosis. This was a physical condition which contraindicated such strenuous and hazardous work. The insurance company has spent large sums of money and the man is still totally disabled.

CASE 4.—Male, age 57, was lifting a heavy rock to put on a truck and strained his back so severely that he had to stop work. He gave a history of intermittent tremor of both hands for more than two years before he began work for his last employer.

Although x-rays did not reveal any abnormality of the spine or pelvis, the back has stubbornly resisted all forms of treatment, the tremors have greatly increased, and he has become very weak. This man had Parkinson's disease at the time of his last employment, which was exaggerated by the trauma to the back. He is totally disabled with no chance for improvement.

CASE 5.—Male, age 41, while working, received a slight injury to his low back from an explosion in the machine shop. Shortly afterward he became totally paralyzed from the level of the first lumbar vertebra. X-rays did not show any abnormality of the lumbar or pelvic regions. The Wassermann was four plus. The paralysis was due to syphilis of the cord and meninges, and was hastened by the trauma to the low back. After five years of very heavy expense to the insurance company, he is totally disabled. Besides his pension he is still receiving electrical treatments.

CASE 6.—Male, age 34, worked as a laborer only a few weeks when his back became so stiff and painful that he was compelled to stop work. Until very recently his work had been of a light type. X-rays showed congenital abnormalities of the lower lumbar and lumbosacral regions which made a back prone to strain. The condition responded very stubbornly to treatment. Slight injuries or repeated strains to backs with faulty structure are frequently heavy losses to insurance companies.

CASE 7.—Male, age 51, was carrying one end of a heavy timber when the other end was suddenly dropped, causing a strain to the lumbosacral region. X-rays gave no evidence of injury to any of the vertebrae or to the pelvic region, but showed well-developed osteoarthritic changes of the lumbar spine. The trauma itself should not have prevented him from working, but it aggravated the hypertrophic spondylitis, causing immediate, total disability with treatment until a rating was forced more than two years after the injury. This case is only one of a very large number, the total of which has been and will be a great economic loss to the insurance companies.

CASE 8.—Male, age 37, stepped onto some iron pipes which started to roll, throwing him backward with a twisting motion toward the left. He was unable to continue work because of sharp pains in the left lumbosacral, sacro-iliac and gluteal regions. After several months of daily electric light baking, with the patient's condition growing steadily worse, there was consultation. Because of marked muscle wasting of the left gluteal and thigh regions, the neurologist believed the condition was due to a nerve lesion. As the greater part of the discomfort was in the region of the left sacro-iliac joint a surgeon advised bone graft immobilization of the joint.

Neither of these doctors had examined the left gluteal region, which was done by the third consultant, who diagnosed the condition as pyriformis myositis with secondary involvement of the sciatic nerve. Pyriformis myositis is not an uncommon injury, responds quickly and completely to treatment, but is rarely considered by the examining physician.

This man returned to full time, regular work in three weeks, but reported for treatment once a week, for a few weeks, when a complete painless range of body and hip motion was obtained.

CASE 9.—Male, age 24, fell from a scaffold, landing in a "jackknife" position on a hard surface, causing a compression fracture of the body of the third lumbar vertebra. There was good alignment of the lumbar vertebra and no paralysis. He was recumbent on a Bradford frame for four months. Then, with a back brace, he used a wheel chair for several weeks, rarely standing or walking. Six months after the accident there was pain in the lower lumbar and lumbosacral regions with marked limitation of body and hip movements. X-rays at that time showed excellent healing of the injured lumbar vertebra.

With a back brace this man should have been walking around during the tenth week, free from pain and with a good range of hip and body movements. After the fourth month he should have been doing light work. Such fractures heal completely in from six to nine months by conservative treatment.

10. A group of cases of crushing fracture of a vertebra with partial or total paralysis below the lesion. Treatment should be commenced immediately, with the idea of having the patient earn a part or all of his living expenses. The attitude of the insurance companies toward these cases is wrong. Not only can the period of treatment be greatly shortened and the liability considerably reduced, but these patients during their entire convalescence can prepare for a new occupation which might prove as remunerative as the one they were forced to give up. The economic loss in this class of cases has been total when many times it should have been comparatively slight.

TREATMENT OF INJURIES TO THE BACK

Among the greater losses to the insurance companies, because of injuries to the back, are conditions which rarely exist in private practice. The paying of compensation and of all the expenses connected with the injury make the person very

loath to return to work, or even admit that he is getting better. Knowing this the doctor should, by using the most thorough methods, start immediately to make a diagnosis as accurate as possible and direct treatment toward a speedy recovery.

Following strains or sprains of the back, there are varying degrees of stiffness. This limitation of motion is due to an inflammatory reaction, which must be prevented from forming strong bands of fibrous tissue in the injured back as the result of the effusion of blood and serum, or prolonging rest until the obstructive bands matured, or by adding injury, by too early passive movement, to the existing early state of repair.

Muscle power cannot be regained as long as the muscle is in any way deprived of its full opportunity for painless movement. It is by a proper combination of rest, muscle relaxation (often by passive means), and muscle action that the injured back recovers its normal range of painless motion. Therefore the one very essential thing to recovery is voluntary effort on the part of the patient. It is of utmost importance to impress on him clearly the fact that his recovery depends entirely on his own persistent and accurate effort. As purely voluntary movements rarely allow a range sufficient to cause pain, the patient may repeat the attempted movements immediately and at frequent intervals during the day, resulting usually in a rapid and complete recovery.

Fractures of the transverse processes of the lumbar vertebrae, or compression fractures of the body of a vertebra, respond to treatment similarly to strains or sprains of the back, only the non-weight bearing period must be longer.

Following injuries to backs which are potentially weak, because of disease, anomalies, or faulty mechanics, early accurate diagnosis and immediate treatment of the aggravating cause, as well as of the injury, is the only means of reducing the great economic loss which accompanies this class of cases. A thorough physical examination, including an x-ray study, before a person is employed would frequently prevent the temporary or permanent disability which results from slight injuries to the potentially weak back. Sociologists and labor unions have objected to such a procedure because it would result in a large number of unemployed. Instead, it would keep a larger number permanently at a type of work which would not be injurious to them.

The routine treatment of prolonged rest in bed, baking, girdles, braces, plaster jackets, extension in bed, and orders not to move, proclaim to the patient that all back injuries are very serious and may never get well. Besides, the back stiffens, movements are painful, and morale becomes very low. Then the insurance company must treat a chronic condition which should have been avoided. Passive treatment of back injuries is a very common, but a very expensive method.

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DISCUSSION

H. G. McNEIL, M. D. (939 Pacific Mutual Building, Los Angeles).—Much has been said about back injuries where definite pathology can be demonstrated by x-ray study, but not enough about those in which the findings are negative and which constitute a fairly large per cent of the cases under observation and many of which come up for permanent disability rating.

Every severe back strain should be treated as a probable fracture of tissue, either muscular, fibrous, or osseous. I am a firm believer in the use of hydrotherapy in some form from six to eight hours daily for the first few days in all cases of severe low back strain. This prolonged and continuous hyperemia is applied to cause rapid absorption of exudation before it can become organized and involve the nerve tissue adjacent to the injury. I believe the involvement of the nerves in the scar tissue is the cause of much of the prolonged pain and disability.

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MAYNARD C. HARDING, M. D. (700 Electric Building, San Diego). — Doctor Chappel's paper might well serve as a model for the letters we are constantly called on to write to insurance companies.

I should think medical directors would be sick and tired of reading the words "baking and massage." I have felt for a long time that heat therapy is being overdone, and improperly done. I wish to recommend a return to the more stimulating types of hydrotherapy.

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R. W. HARBAUGH, M. D. (350 Post Street, San Francisco).—Since the advent of our compensation laws the treatment of back injuries has assumed a different aspect due to the medico-legal problems which may be involved. An exact diagnosis is the first duty of the attending physician, no matter how trivial the injury may seem. Simply strapping a mild back strain with adhesive tape and ordering hot applications seems to me short-sighted. Each case should be given a complete physical examination. The problem is not always a simple one, as the cases cited in this paper should prove. It is often as difficult as a diagnosis in any other obscure disease of the body. The mental problem is involved in every case and must be recognized and intelligently treated and given its proper valuation by the doctor. The art of handling people and giving adequate assurance at the proper time in simple cases prevents many a traumatic neurosis and prolonged disability.

A narrow man who sees only his own specialty is not the best physician to treat a back case. The routine, systematic physical examination is the one that counts, and the doctors who are obtaining the best results are those whose training and experience do not limit their examinations or viewpoint.

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FREDERICK H. RODENBAUGH, M. D. (323 Medico-Dental Building, San Francisco).—The necessity for an early and complete roentgenologic study of the back in all cases of suspected injury is obvious. The exact location of the injury is frequently difficult to determine from clinical signs, and the necessity for a very complete survey of the spine in suspected back injuries is of the greatest importance.

The more frequent occurrences of minor bone injuries, which formerly were suspected and can now be demonstrated, is due to improvement of technique and knowledge of interpretation; and we can expect further advances in this regard.

In no part of the body is the roentgenologist confronted with such difficulties in interpretation and differentiation between injury and disease, with frequent anomalies to further confuse the picture, as in the spinal column.

We believe that a detailed localized study of the spine in stereoscopic films, not trying to include the entire spine on a single plate with only a small portion in focus but studying the vertebrae in detail, will yield sufficient additional information to compensate for the additional material expended and the time involved in such a study.